



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,988	10/30/2003	Yingxue Li	P-9250-US	7853
49443 7590 08/27/2007 PEARL COHEN ZEDEK LATZER, LLP 1500 BROADWAY 12TH FLOOR NEW YORK, NY 10036			EXAMINER DOAN, PHUOC HUU	
			ART UNIT 2617	PAPER NUMBER
			MAIL DATE 08/27/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/696,988	Applicant(s) LI ET AL.	
	Examiner PHUOC H. DOAN	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28 and 29 is/are allowed.
- 6) ☒ Claim(s) 1-15, 19-21 and 25-27 is/are rejected.
- 7) ☒ Claim(s) 16-18 and 22-24 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-15, 19-21, 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Eltawil (US Pub No: 2003/0142726)** in view of **Sourour (US Patent No: 6,810,070)**.

As to claim 1, 14, 20, 27, Eltawil discloses a method for processing receive diversity signals (page 3, par. [0026]), comprising: receiving a downlink signal at a plurality of antennas of a mobile device (page 5, par. [0053]), the downlink signal comprising information (Fig. 2 with description); generating a plurality of diversity signals associated with the downlink signal (page 6, par. [0058]), each of the plurality of antennas operable to generate a diversity signal of the plurality of diversity signals (page 5-page 6, par. [0053-0058]); applying a delay to at least one of the plurality of diversity signals (page 2, par. [0015]); and processing the

plurality of diversity signals using the delay to obtain the information (page 2, par. [0015-0016]), the delay operable to allow at least two diversity signals associated with the downlink signal to be distinguishable (page 2, par. [0014-0016]).

However, Eltawil does not disclose the delay being less than one chip duration.

In the same field of endeavor, Sourour discloses the delay being less than one chip duration (col. 9, lines 11-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the delay being less than one chip duration as taught by Sourour to the system of Eltawil in order to select channel to the chip duration is used to determine the number of resolvable paths per carrier in a communication system.

As to claim 2, 8, 15, 21, Sourour further discloses the method of claim 1, wherein the delay comprises a delay of 0.4 to 0.8 microseconds (col. 9, lines 52-55).

As to claim 3, Eltawil further discloses the method of claim 1, further comprising summing the plurality of diversity signals after applying the delay to yield a combined signal comprising the delayed at least one of the plurality of diversity signals (page 7, par. [0066]).

As to claim 4, 11, Eltawil further discloses the method of claim 3, wherein processing the plurality of diversity signals to obtain the information further comprises: separating the combined signal in the time domain to yield a plurality of fingers (page 2, par. [0018-0019]), the plurality of fingers corresponding to the plurality of diversity signals (page 2, par. [0019]), at least one finger of the plurality of fingers comprising the delay (page 2, par. [0016]); coherently combining the plurality of fingers to yield a combined symbol signal (page 2, par. [0018]), the combined symbol signal corresponding to the downlink signal (page 6, par. [0057]); and decoding the combined symbol signal to generate the information (See page 7, par. [0066]).

As to claim 5, 10, Eltawil further discloses the method of claim 3, further comprising converting the combined signal from analog mode to digital mode (page 4, par. [0041]).

As to claim 6, 13, Eltawil further discloses the method of claim 1, wherein generating the plurality of diversity signals further comprises filtering each of the diversity signals received from the plurality of antennas (page 5, par. [0047]).

As to claim 7, 26, Eltawil discloses a system for processing receive diversity signals (page 3, par. [0026]), comprising; a plurality of antennas operable to “Fig. 2, items 34, 36”: receive a downlink signal (Fig. 2 with description), the downlink signal comprising information (page 6, par. [0058]); and generate a plurality of diversity signal associated with the downlink signal (page 6, par. [0058]), each of the plurality of antennas operable to generate a diversity signal of the plurality of diversity signals (page 5-page 6, par. [0053-0058]); and a processor “Fig. 2, item 60” coupled to the delay module and operable to process the plurality of diversity signals using the delay to obtain the information (page 2, par. [0015-0016]), the delay operable to allow at least two diversity signals associated with the downlink signal to be distinguishable (page 2, par. [0014-0016]). However, Eltawil does not disclose a delay module coupled to the plurality of antennas and operable to apply a delay to at least one of the plurality of diversity signals, the delay being less than one chip duration.

In the same field of endeavor, Sourour discloses a delay module coupled “Fig. 5, item 532” to the plurality of antennas and operable to apply a delay to at least one of the plurality of diversity signals “col. 9, lines 11-13”, the delay being less than one chip duration (See col. 9, lines 52-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the

delay being less than one chip duration as taught by Sourour to the system of Eltawil in order to select channel to the chip duration is used to determine the number of resolvable paths per carrier in a communication system.

As to claim 9, Eltawil further discloses the system of claim 7, further comprising an antenna combiner “Fig. 2, item 84” operable to: sum the plurality of diversity signals after applying the delay; and yield a combined signal comprising the delayed “related to multipath” at least one of the plurality of diversity signals (page 7, par. [0066]).

As to claim 12, Eltawil further discloses the system of claim 11, wherein the processor comprises a baseband processor (digital signal processing DSP is required baseband process components, see page 5, par. 0047)).

As to claim 19, 25, Sourour further discloses the method of claim 14, wherein applying at least one delay to at least one of the plurality of split signals further comprises buffering the at least one of the plurality of split signals to introduce the at least one delay (col. 9, lines 10-40).

Allowable Subject Matter

3. Claims **28, 29** are allowed.

As to claim 28, the prior art of record in alone, or combination does not disclose a system for processing receive diversity signals, comprising; a plurality of antennas operable to: receive a downlink signal, the downlink signal comprising information; and generate a plurality of diversity signal associated with the downlink signal, each of the plurality of antennas operable to generate a diversity signal of the plurality of diversity signals; a plurality of filters, each filter of the plurality of filters coupled to an antenna of the plurality of antennas and operable to filter each of the diversity signals received from the plurality of antennas; a delay module coupled to at least one of the plurality of filters and operable to apply a delay to at least one of the plurality of diversity signals, the delay being less than one chip duration, the delay comprising a delay of 0.4 to 0.8 microseconds; an antenna combiner operable to: sum the plurality of diversity signals after applying the delay; and yield a combined signal comprising the delayed at least one of the plurality of diversity signals; an analog-to-digital converter operable to convert the combined signal from analog mode to digital mode; and a processor coupled to the

delay module and operable to process the combined signal using the delay to obtain the information, the delay operable to allow at least one multipath signal associated with the downlink signal to be distinguishable, the processor comprising a baseband processor, the baseband processor comprising: a rake receiver module operable to: separate the combined signal in the time domain to yield a plurality of fingers, the plurality of fingers corresponding to the plurality of diversity signals, at least one finger of the plurality of fingers comprising the delay; and coherently combine the plurality of fingers to yield a combined symbol signal, the combined symbol signal corresponding to the downlink signal; and a decoder coupled to the rake receiver module and operable to decode the combined symbol signal to generate the information.

As to claim 29, the prior art of record in alone, or combination does not disclose a system for processing a transmit signal, comprising: a splitter operable to: receive a transmit signal, the transmit signal comprising information; and split the transmit signal into a plurality of split signals; a delay module coupled to the splitter and operable to: apply at least one delay to at least one of the plurality of split signals to yield a plurality of transmit diversity signals, the delay module comprising a buffer operable to introduce the at least one delay, the at least one delay

comprising a first delay and a second delay, the first delay being less than the second delay; introduce the first delay at a first split signal of the plurality of split signals, the first delay comprising a delay in the range between 0.25 microseconds and five microseconds; and introduce the second delay at a second split signal of the plurality of split signals, the second delay comprising a delay in the range between 0.5 microseconds and ten microseconds; and a plurality of antennas operable to transmit the plurality of transmit diversity signals in order to process the plurality of transmit diversity signals, the transmit diversity signals comprising the information.

4. Claims **16-18, 22-24** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claims **16, 22**, the prior art of record does not disclose wherein: the at least one delay comprises a first delay and a second delay, the first delay being less than the second delay; and the delay module further operable to: introduce the first delay at a first split signal of the plurality of split signals; and introduce the second

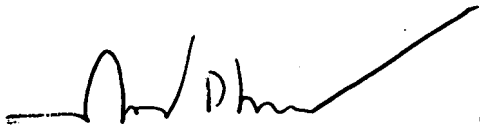
delay at a second split signal of the plurality of split signals.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHUOC H. DOAN whose telephone number is 571-272-7920. The examiner can normally be reached on 9:30 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOSEPH FEILD can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Phuoc Doan
08/03/07

JEAN GELIN
PRIMARY EXAMINER

